



ISSN: 2350-0328

**International Journal of Advanced Research in Science,  
Engineering and Technology**

**Vol. 5, Issue 6 , June 2018**

# **Automation of Patient Medical Record Dispatch System Software Application**

**Bhavya Teja Gurijala , Srinivas Rahul Sapireddy**

Department of Computer Science, University of Missouri Kansas City, USA  
Department of Computer Science, University of Illinois at Springfield, USA

**ABSTRACT:** This paper presents the automation of the entire reporting activity by developing a software application to process various diagnostic test requests and their reports into a web console which can be viewed online by the diagnostic center administration, doctors and the patients as well. Predominantly in a hospital we have the patients approaching the doctors for a medical check-up. In many instances Doctor advice some prerequisite tests to the patient to evaluate the medical condition. The patient needs to approach the diagnostic center for getting these tests done. This process is pretty naïve in nature, highly manual which involves a lot of paperwork.

**KEYWORDS:** Computer Security, Semi-structured data, Database management, Dispatch System

## **I. INTRODUCTION**

We have been having a lot of research going on under this field; however there have always been few discrepancies. Our research tries to fix these defects and propose an improved model that would benefit the existing health care centers. This project is inspired from a group Cleveland Clinic which had developed a similar software on the record dispatch functionalities but had few security issues. However we cannot rely on the old manual record dispatch system due to the drawbacks in regards with a lot of paper work, low efficiency and a lot of manual work which is definitely a burden to the patients and also the hospital administration. In our paper we have used Angular JS for the frontend and Mongo Lab for storing the data to enhance the security of the application. Since the application deals with the dispatching of the medical records, security becomes a major concern. Angular application typically communicates with a server via a Hyper Text Transfer Protocol Secure (HTTPS) interface even while using the REST full services and Mongo Lab is loosely coupled with structure of the data. The main reason for using Mongo Lab is to extend the future scope of the project where we can bring in the unstructured or semi-structured data.

## **II. RELATED WORK**

Our paper mainly focuses on the advancement of the technology in the medical field which diminishes the physical burden. The system that is developed can help the patients to have a medical record which has a wide scope throughout their life. It provides stress-free approach for the doctors to know more about the background of the patient. Hospitals can also integrate security features to have a secured way of accessing patient information.

## **III. PROPOSED SYSTEM**

The system we are proposing in this paper is completely atomized and involves no paper work. The proposed system improves the legibility and accuracy of the existing system. Here doctors refer the patient to diagnostic center through a website. These tests are ordered by a doctor to a patient and based on availability of the patient; diagnostic center will create an appointment. The patient has to approach the diagnostic center and get the tests done during the time of the appointment. Once the doctor orders a test, the patient details are appended to the databases to rage and the doctors, patients, the diagnostic center admin can view the details of the test on their respective dashboards. Since we are using



ISSN: 2350-0328

# International Journal of Advanced Research in Science, Engineering and Technology

Vol. 5, Issue 6 , June 2018

Mongo Lab we have the data stored in terms of collections. So we start with a log in screen where the type of users is classified and their login credentials are authenticated. This entire application was developed in Ionic Framework which consists of HTML5 and Angular JS for the front end and using the Angular JS we had established connections to FileStack and Email JS API's for report storage/retrieval and email acknowledgement respectively. However the main data about the patients, doctors, and diagnostic center admins are stored in Mongo Lab. Admin registers any type of users in this case: (Patient, Doctor, Diagnostic center admin, Admin). Once the users are registered a mail is sent to them respectively with their credentials on the registered email id. The user logs into the system using their credentials respectively and finds their dashboards populated with related information. Once a doctor requests the test to a patient, the request is sent to the diagnostic center admin. The Diagnostic center admin performs the tests and he can upload the test results via a browse button. The test results that are uploaded are available for view for all the types of users (Doctor, Patient, Diagnostic center admin, Admin).

## IV. EXISTING SYSTEM

Currently we have a system where a doctor refers a test for a patient based on his findings. The patient carries these tests requests of the doctor and gets the diagnostics done in a diagnostic center either affiliated to the same hospital or a center suggested by the doctor. Once the tests are done the patient needs to carry back the results to the doctor for further diagnosis. This procedure is a time taking and an exhaustive manual process where the patient has to carry papers all the time. This situation gets worse if the patient is redirected to another doctor based on the results of the tests. We also might encounter cases where the reports of the patient might get damaged/ lost. It would be ideal to have a web console where these reports are available online and by creating such a console we ensure the reports are confidential and are restricted only to that particular patient and doctor who is consulting.

### I. ARCHITECTURE DIAGRAM:

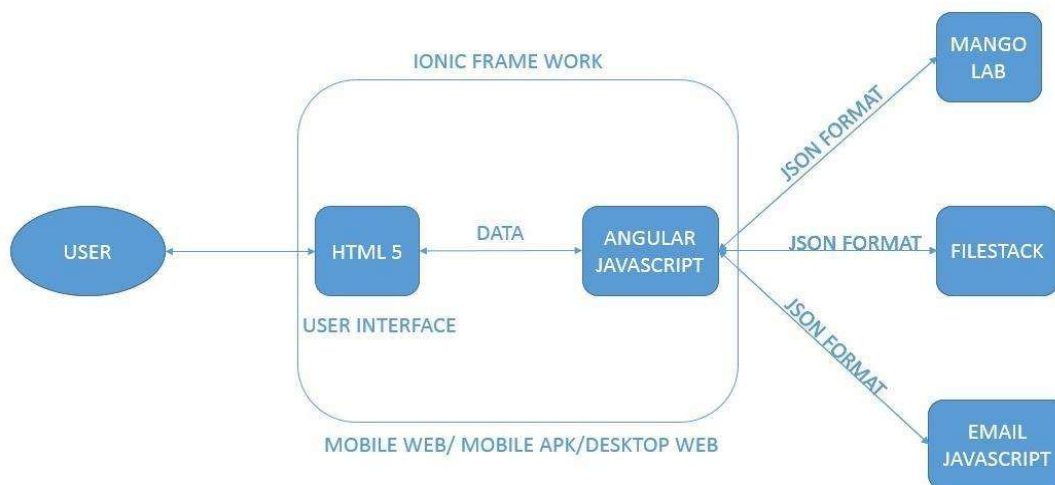


Figure 1. Architecture Diagram



ISSN: 2350-0328

# International Journal of Advanced Research in Science, Engineering and Technology

Vol. 5, Issue 6 , June 2018

## II. DATABASE SCHEMA

Figure 2: Schema of the Database



### III. FLOW OF ACTIONS

Actors: Patient, Doctor, Diagnostic Center Admin, Hospital Admin.

So in our new model, we have a patient visiting a doctor and the doctor suggests some tests for him based on his ailment. The doctors then send these test requests to the labs/diagnostic centers and the patients visit these centers to give the tests. Once the tests are done the Lab/Diagnostic center In-charge uploads these test results and make it available to the doctors and the patient. The Diagnostic center admin uploads these reports on his console and the doctor, patient gets an email acknowledgment stating that the results are available. This process would ensure that the actors are aware when the report is uploaded and can access it on their respective dashboards.

#### Patient Workflow

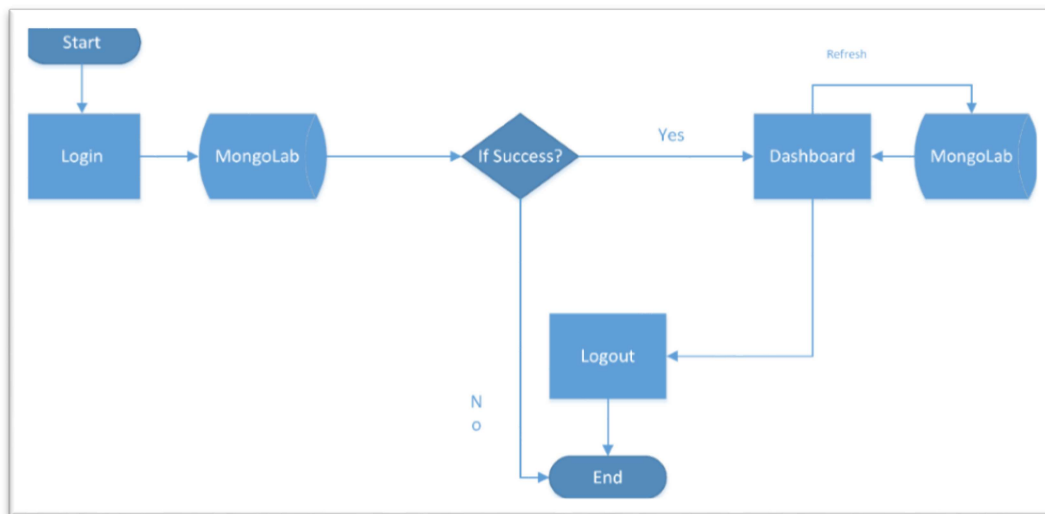


Figure 3. Workflow of a Patient

#### Doctor Workflow

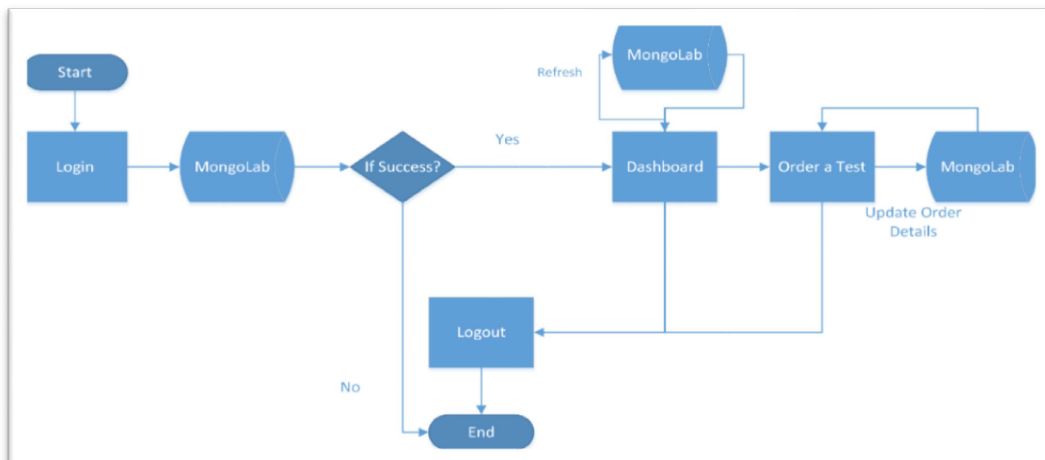


Figure 4. Workflow of a Doctor

**Diagnostic Center Admin Workflow**

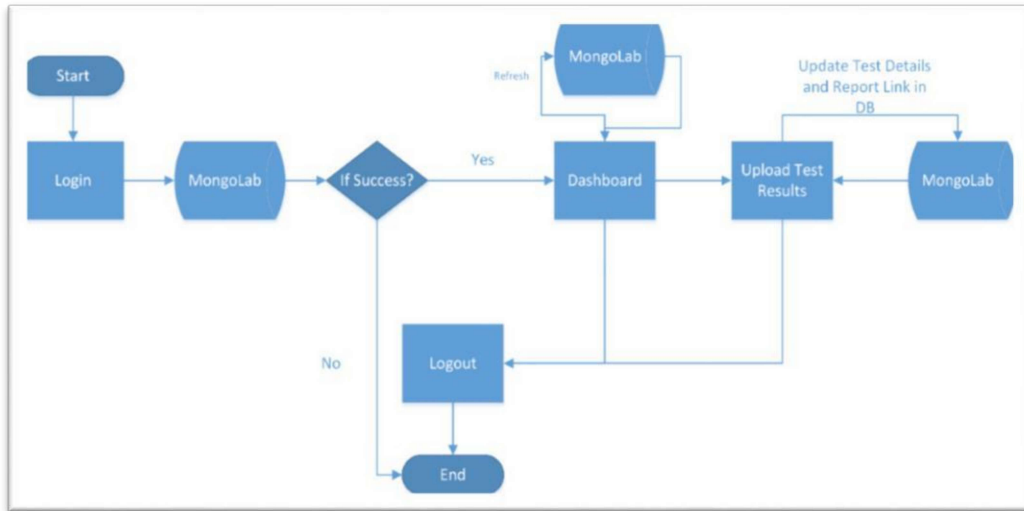


Figure 5. Workflow of Diagnostic Center Admin

**Hospital Admin Workflow**

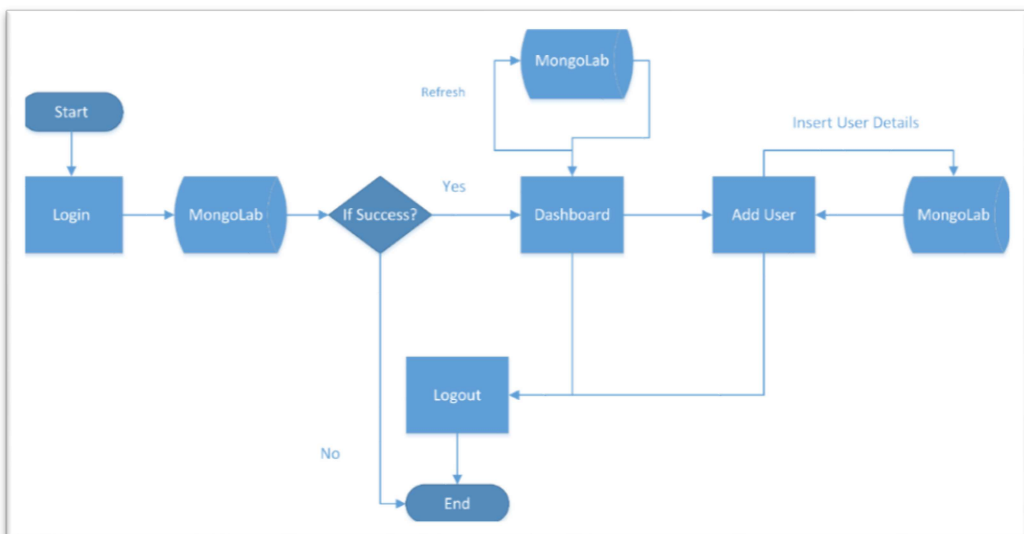


Figure 6. Workflow of Hospital Admin



ISSN: 2350-0328

# International Journal of Advanced Research in Science, Engineering and Technology

Vol. 5, Issue 6 , June 2018

## V. CONCLUSION AND FUTURE SCOPE

Our Paper has improved the existing medical dispatch system. We can dispatch the reports in a more secure, speedy and more efficient way. The System developed has functionalities that can be altered based on different scenarios for different sets of users. We have used the advanced technologies in market and made the UI as friendly to ensure the ease of use. It also implements Mongo DB which has a way to store data in unstructured manner and can be extended to Big Data Application. The application is flexible for big data usage and Mongo has a BASE characteristic which makes it faster than the other existing Big Data tools. The Application has been developed in an ionic Framework which helps us in using it as a web application and also a mobile application.

## REFERENCES

- [1] RexWong&ElizabethH.Bradley,(2009)“Developingpatientregistrationandmedicalrecordsmanagement system in Ethiopia”, International Journal for Quality in Health Care, Vol. 21, No. 4,pp253-258.
- [2] Randolph C. Barrows, Paul D. Clayton, (1996) “Privacy, Confidentiality and Electronic Medical Records”, Journal of the American Medical Informatics Association, Vol. 3, No. 2,pp139-148.
- [3] Abhinav Agarwal, (2004) “Patient Monitoring, Rescue and Response System provided by futurecity,Inc.”.
- [4] E. Kyriacou, M.S. Pattichis, C.S. Pattichis, A. Panayides, A. Pitsillides, (2006) “m-Health e-Emergency Systems: Current Status and Future Directions”, IEEE Antennas & Propagation.